

Material Safety Data Sheet

Epichlorohydrin, 99%

ACC# 96110

Section 1 - Chemical Product and Company Identification

MSDS Name: Epichlorohydrin, 99%**Catalog Numbers:** AC117780000, AC117780010, AC117780025, AC117780250, AC117785000**Synonyms:** Epichlorohydrin; 1-Chloro-2,3-epoxypropane.**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
106-89-8	Epichlorohydrin	99.0	203-439-8

Hazard Symbols: T**Risk Phrases:** 10 23/24/25 34 43 45

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: 28 deg C. **Flammable liquid and vapor.** May cause reproductive and fetal effects. May cause liver and kidney damage. Harmful if swallowed, inhaled, or absorbed through the skin. **Danger!** Corrosive. Cancer suspect agent. May cause cancer based on animal studies. Causes severe eye irritation. Causes severe respiratory tract irritation. Causes digestive tract irritation. Causes skin burns. May cause allergic skin and respiratory reaction. Keep refrigerated. (Store below 4°C/39°F.)

Target Organs: Kidneys, liver.**EXHIBIT**

tabbles

B**Potential Health Effects****Eye:** Causes severe eye irritation.

Skin: Harmful if absorbed through the skin. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Skin contact causes itching, erythema (redness), and severe burns, which may appear after a latent period ranging from several minutes to days.

Ingestion: Harmful if swallowed. May cause systemic toxicity with acidosis. Causes gastrointestinal tract irritation.

Inhalation: Harmful if inhaled. May cause asthmatic attacks due to allergic sensitization of the respiratory tract. Causes severe respiratory tract irritation.

Chronic: Prolonged or repeated skin contact may cause sensitization dermatitis and possible

destruction and/or ulceration. May cause liver and kidney damage. May cause cancer according to animal studies. May cause reproductive and fetal effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid immediately. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May polymerize explosively when involved in a fire. May be ignited by heat, sparks, and flame. Containers may explode if exposed to fire.

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Do NOT use straight streams of water. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.

Flash Point: 28 deg C (82.40 deg F)

Autoignition Temperature: 411 deg C (771.80 deg F)

Explosion Limits, Lower:3.8

Upper: 21.0

NFPA Rating: (estimated) Health: 3; Flammability: 3; Instability: 2

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Prevent spreading of vapors through sewers, ventilation systems and confined areas.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep refrigerated. (Store below 4°C/39°F.) Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Outside or detached storage is preferred.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Epichlorohydrin	0.5 ppm TWA; skin - potential for cutaneous absorption	NIOSH Potential Occupational Carcinogen - see Appendix A Potential NIOSH ⁺ carcinogen.	5 ppm TWA; 19 mg/m ³ TWA

OSHA Vacated PELs: Epichlorohydrin: 2 ppm TWA; 8 mg/m³ TWA

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless

Odor: Irritating chloroform-like odor.

pH: Not available.

Vapor Pressure: 13 mm Hg @ 20 C

Vapor Density: 3.29

Evaporation Rate: 0.06

Viscosity: 1.02 cP @ 25C

Boiling Point: 115 deg C

Freezing/Melting Point: -57 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: 1.18

Molecular Formula: C₃H₅ClO

Molecular Weight: 92.52

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: High temperatures, mechanical shock, incompatible materials, ignition sources, acids, alkaline materials.

Incompatibilities with Other Materials: Acids, bases, ammonia, amines, sodium, zinc, magnesium, aluminum, and halides. Explosive reaction with aniline, trichloroethylene (through the formation of dichloroacetylene), potassium tert-butoxide (ignition), sulfuric acid, or isopropylamine.

Hazardous Decomposition Products: Hydrogen chloride, chlorine, phosgene, carbon monoxide, carbon dioxide.

Hazardous Polymerization: May occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 106-89-8: TX4900000

LD50/LC50:

CAS# 106-89-8:

Draize test, rabbit, eye: 100 mg Severe;

Draize test, rabbit, eye: 100 mg/24H Moderate;

Inhalation, rat: LC50 = 250 ppm/8H;

Oral, mouse: LD50 = 195 mg/kg;

Oral, rabbit: LD50 = 345 mg/kg;

Oral, rat: LD50 = 90 mg/kg;

Skin, rabbit: LD50 = 515 mg/kg;

Carcinogenicity:

CAS# 106-89-8:

ACGIH: A3 - Animal Carcinogen

California: carcinogen; initial date 10/1/87

NIOSH: occupational carcinogen

NTP: Suspect carcinogen

OSHA: Possible Select carcinogen

IARC: Group 2A carcinogen

Epidemiology: Carcinogenic in experimental animals and is a suspected human carcinogen.

Teratogenicity: Teratogenic tests performed but results inconclusive.

Reproductive Effects: No known reproductive effects.

Neurotoxicity: No information available.

Mutagenicity: Acts as a conjugate to mutagenic activity.

Other Studies: No data available.

Section 12 - Ecological Information

Ecotoxicity: Fish: Bluegill/Sunfish: LC50 = 35 mg/L; 96 Hr.; Unspecified Goldfish: LC50 = 42 mg/L; 96 Hr.; Static, 23 degrees C LC50 = 36 mg/L; 48 Hr.; Unspecified No data available.

Environmental: Terrestrial: volatilizes into atmosphere, leaches into soil. Aquatic: Volatilizes into atmosphere and hydrolyzes (half life 5-8 days). Atmospheric: Eventually degrades by photochemically produced hydroxyl radicals (half life 4 days). Slight biodegradation and low

bioconcentration.

Physical: No information found.

Other: Epichlorohydrin would not be expected to bioconcentrate appreciably in aquatic organisms. The log BCF has been estimated to be 0.66.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: CAS# 106-89-8: waste number U041.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	EPICHLOROHYDRIN				EPICHLOROHYDRIN
Hazard Class:	6.1				6.1(9.2)
UN Number:	UN2023				UN2023
Packing Group:	II				II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 106-89-8 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 106-89-8: Effective Date: October 4, 1982; Sunset Date: October 4, 1992

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

CAS# 106-89-8: final RQ = 100 pounds (45.4 kg)

Section 302 (TPQ)

CAS# 106-89-8: TPQ = 1000 pounds; RQ = 100 pounds (does not meet toxicity criteria but because of high production volume and recognized toxicity is considered a chemical of concern)

SARA Codes

CAS # 106-89-8: acute, chronic, flammable, reactive.

Section 313

This material contains Epichlorohydrin (CAS# 106-89-8, 99.0%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 106-89-8 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 106-89-8 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 106-89-8 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act: WARNING: This product contains Epichlorohydrin, a chemical known to the state of California to cause cancer. WARNING: This product contains Epichlorohydrin, a chemical known to the state of California to cause birth defects or other reproductive harm. California No Significant Risk Level: CAS# 106-89-8: no significant risk level = 9 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T

Risk Phrases:

R 10 Flammable.

R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

R 34 Causes burns.

R 43 May cause sensitization by skin contact.

R 45 May cause cancer.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)

CAS# 106-89-8: 3

Canada - DSL/NDSL

CAS# 106-89-8 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D1A, D2A.

Canadian Ingredient Disclosure List

CAS# 106-89-8 is listed on the Canadian Ingredient Disclosure List.

Exposure Limits

CAS# 106-89-8: OEL-ARAB Republic of Egypt:TWA 2 ppm (10 mg/m³);Skin
OEL-AUSTRALIA:TWA 2 ppm (10 mg/m³);Skin OEL-BELGIUM:TWA 2 ppm (7.6 mg/m³);Skin OEL-CZECHOSLOVAKIA:TWA 1 mg/m³;STEL 2 mg/m³ OEL-DENMARK:TWA 0.5 ppm (1.9 mg/m³);Skin OEL-FINLAND:TWA 0.5 ppm (1.9 mg/m³);Skin;
Carcinogen OEL-FRANCE:STEL 2 ppm (10 mg/m³);Carcinogen OEL-GERMANY:Skin;
Carcinogen OEL-HUNGARY:STEL 1 mg/m³;Skin;Carcinogen OEL-THE NETHERLANDS:TWA 1 ppm (4 mg/m³);STEL 4 ppm;Skin OEL-THE PHILIPPINES:TWA 5 ppm (19 mg/m³);Skin OEL-POLAND:TWA 1 mg/m³ OEL-SWEDEN:TWA 0.5 ppm (1.9 mg/m³);STEL 1 ppm (4 mg/m³);Skin OEL-SWITZERLAND:TWA 2 ppm (8 mg/m³);Skin;
Carcinogen OEL-TURKEY:TWA 5 ppm (19 mg/m³);Skin OEL-UNITED KINGDOM:TWA 2 ppm (8 mg/m³);STEL 5 ppm;Skin OEL IN BULGARIA, COLOMBIA

, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNA
M check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 5/10/1999

Revision #2 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.